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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,665	04/09/2004	Chien-Min Sung	22762	8792
7590 THORPE NORTH & WESTERN, LLP P. O. Box 1219 Sandy, UT 84091-1219			EXAMINER RACHUBA, MAURINA T	
			ART UNIT 3727	PAPER NUMBER
			MAIL DATE 09/08/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,665

Applicant(s)

SUNG, CHIEN-MIN

Examiner

Maurina Rachuba

Art Unit

3727

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-7, 9-13, 27 and 30-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-7, 9-13, 27 and 30-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-7, 9-13 27,30-32, 40- 44, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer et al, 6,054,183, newly cited, in view of Homola, 2004/0096705. '183, column 4, lines 7 through column 7, lines 5, teaches the claimed invention, including a planar metal substrate, a polishing layer having an organic (polymer, see column 4, lines 63 through column 5, lines 8) matrix with diamond particles the layer including a plurality of projections (the particles) spaced apart in a loading ratio, the particles including a diamond-like carbon coating. '183 does not disclose the same loading ratio, and does not disclose that the abrasive comprises nanodiamonds. Regarding the claimed ratio, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided '183 with the claimed loading ratios, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Regarding the size of the abrasive, in a similar apparatus, '705 teaches that it is known to use nanodiamonds in a polishing pad. The nanodiamonds have a Mohs hardness greater than about 9.5 (diamond has a Mohs hardness of 10); and are in the claimed size ranges. Because

both references teach fixed abrasive tools, it would have been obvious to one skilled in the art to substitute one known abrasive for another, to achieve the predictable result of smoothing a workpiece surface to the smallest desired roughness.

3. Regarding claims 27 and 30-32, '183, see Example 1, column 11, lines 1-11, teaches the claimed method, including (inherently) applying the tool to the workpiece at a pressure (the tool must contact the workpiece, therefore there is at least some pressure) and removes material from the workpiece. '183 does not disclose the pressure or the amount of material removed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided '183 with the claimed pressures and amounts of material removed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

4. Regarding claims 43, 44, and '183 discloses that the polishing layer has a diamond concentration, but does not disclose the claimed range. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided '183 with the claimed pressures and amounts of material removed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Regarding claims 40-41, '183 does not disclose the workpiece, or that the tool is a CMP polishing pad. '705 teaches that it is old and well known to form a nanodiamond

abrasive tool as a CMP polishing pad to process for example hard drive platters. It would have been obvious to one of ordinary skill to have made the tool of '183 as a CMP polishing pad for hard drive platters, as taught by '705, column 2, lines 8-12 and lines 28-30, for the predictable result of finishing a variety of workpieces.

6. Claims 42, 43, 45, 46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmer et al, 6,054,183, newly cited, in view of Homola, 2004/0096705 as applied to claims 1, 4-7, 9-13 27,30-32, 40- 44, and 47 above, and further in view of Goers et al, 6,722,952. , '183 does not disclose the polishing layer further comprises a filler material, the polishing layer further includes an intermediate material which forms chemical bonds between the diamond particles and the organic matrix; a filler material having a Moh's hardness less than 6 and the organic matrix further includes an organic binder and a softening agent. In a polishing pad, '952 teaches the use of a filler material, which forms chemical bonds between the abrasive and organic matrix, the filler having a Moh's hardness of less than 6 and the organic matrix including a softening agent, see column 9, lines 5-27 and column 8, line 51. It would have been obvious to one of ordinary skill to have provided '183 with the extra components as claimed, and as taught by '952, for the predictable result of providing an adequate bond between the abrasive and matrix.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 4-7, 9-13, 27, and 30-48 have been considered but are moot in view of the new ground(s) of rejection. As the new

grounds are not based on an amendment, or on a newly cited reference provided by applicant, this action is made non-final to allow applicant fair opportunity to respond.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maurina Rachuba whose telephone number is 571 272 4493. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica Carter can be reached on 571 272 4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. Rachuba/
Primary Examiner, Art Unit 3727